(2) annealing said SiO_2 film as formed in step (1) while said SiO_2 film is in contact with oxygen gas or an oxygen plasma to release carbon and H_2O from said SiO_2 film, and thereby convert said SiO_2 film into a porous SiO_2 film containing boron.

11. (Amended) A method according to claim 41, wherein said side wall insulating film is formed by the steps of:

forming said damascene trench and then forming a first insulating film on said interlayer insulating film, on the sides of said damascene trench and on a bottom of said damascene trench; and

anisotropically etching said first insulating film to such an extent that said first insulating film formed on the sides of said damascene trench remains and said first insulating film formed on the bottom of said damascene trench is removed.

Please add the following new claims:

–40. A method for forming an interlayer insulating film comprising the steps of:

forming a SiO_2 film containing boron, carbon and H_2O on a substrate by plasma enhanced chemical vapor deposition using a source gas containing an Si-C-O-H compound, an oxidative gas and a compound containing boron;

annealing said SiO_2 film while said SiO_2 film is in contact with oxygen gas or an oxygen plasma to release carbon and H_2O from said SiO_2 film, and thereby convert said SiO_2 film into a porous SiO_2 film containing boron; and

contacting said porous SiO_2 film with a hydrogen plasma.

41. A method for forming an interlayer insulating film comprising the steps of:

forming a SiO_2 film containing boron, carbon and H_2O on a substrate by plasma enhanced chemical vapor deposition using a source gas containing an Si-C-O-H compound, an oxidative gas and a compound containing boron;

annealing said SiO_2 film while said SiO_2 film is in contact with oxygen gas or an oxygen plasma to release carbon and H_2O from said SiO_2 film, and thereby convert said SiO_2 film into a porous SiO_2 film containing boron;

after forming said interlayer insulating film on said substrate, forming a damascene trench in said interlayer insulating film;

forming a side wall insulating film on sides of said damascene trench;

embedding a metal film in said damascene trench; and

forming a barrier metal layer on said metal film.

42. A method for forming an interlayer insulating film comprising the steps of:

forming a SiO_2 film containing boron, carbon and H_2O on a substrate by plasma enhanced chemical vapor deposition using a source gas containing an Si-C-O-H compound, an oxidative gas and a compound containing boron;

annealing said SiO_2 film while said SiO_2 film is in contact with oxygen gas or an oxygen plasma to release carbon and H_2O from said SiO_2 film, and thereby convert said SiO_2 film into a porous SiO_2 film containing boron;

after forming said interlayer insulating film on said substrate, forming a damascene trench in said interlayer insulating film;